U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
NATIONAL METEOROLOGICAL CENTER

OFFICE NOTE 29
(updated version of the September 1973 edition)

NMC FORMAT FOR OBSERVATIONAL DATA (ADP REPORTS)

Automation Division Staff

DECEMBER 1990

Revision Number 4 to NMC Office Note 29

This revision updates Table R.2 (Instrument Type) to conform with Table 0 02 011 (Radiosonde Type) in the WMO FM 94-IX Code Form: Binary Universal Format for the Representation of Meteorological Data (BUFR). BUFR Table 0 02 011 has been approved by the CBS of the WMO and will appear in the next publication of WMO FM 94-IX in mid-1991. These new instrument type designations will begin to be used at the NMC on or about January 23, 1990. The NMC contact for questions related to instrument types is Dr. Paul Julian (W/NMCx3). He can be reached on 301-763-4409.

Table R.2: Instrument Type (2 characters)

Code Figure	Radiosonde Insturment Type
0-1	Not used
2	No 'sonde - passive target (e.g., reflector)
3	No 'sonde - active target (e.g., transponder)
4	No 'sonde - passive temp-humidity profiler
5	No 'sonde - active temp-humidity profiler
6	No 'sonde - radio-acoustic sounder
7-8	No 'sonde - ... (reserved)
9	No 'sonde - system unknown or not specified
10	RS VIZ Type A
11	RS VIZ Type B
12	RS SDC
13	Astor
14	Beukers Microsonde
15	EEC Company Type 23
16	Elin
17	Graw G
18	Reserved
19	Graw M60
20	Indian Met Service MK3
21	Jinyang
22	Meisei RS2-80
23	Mensural FMO 1950A
24	Mensural FMO 1945A
25	Mensural MH73A
26	Meteolabor Basora (Swiss)
27	Meteorite A22IV
28	Meteorite Marz2-1
29	Meteorite Marz2-2
30	Oki RS2-80
31	Sangamo
32	Shanghai Radio
33	UK Met Office MK3
34	Vinohrady
35	Vaisala RS18
36	Vaisala RS21
37	Vaisala RS80
38	Beukers LOCATE (LORAN-C)
39	Sprenger E076
40	Sprenger E084
41	Sprenger E085
42	Sprenger E086
43	AIR IS - 4A - 1680
44	AIR IS - 4A - 1680 X

Table R.2: (continued)

Code Figure	Radiosonde Insturment Type
45	RS MSS
46-59	reserved for additional radiosondes
60	Vaisala RS80/MicroCora
61	Vaisala RS80/DigiCora or Marwin
62	Vaisala RS80/PCCora
63	Vaisala RS80/Star
64-89	reserved for additional automated systems
91-254	reserved
255	missing

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NMC FORMAT FOR OBSERVATIONAL DATA (ADP REPORTS)

Automation Division Staff

MAY 1987

Revision No. 3 to NMC Office Note No. 29

The date of this revision is April 30, 1987 (4/30/87).

This revision updates Table R.2 (Instrument type) which expands and improves the information related to the type of instrumentation used by radiosonde observing sites. The new procedures were implemented at NMC on August 27, 1986. The NMC contact for questions related is Dennis Keyser of the Development Division (W/NMC22). He can be reached on FTS 763-8161.

TABLE R.2 INSTRUMENT TYPE (2 CHARACTERS)

Code Fig.	Description Country - instrument name	Upper-Air Dictionary Code (OLD and NEW versions)
#01	US-NOAA VIZ External Thermistor	OLD- (1 or J) same NEW- (N1)
02	US-NOAA External Thermistor (plateau stns.)-NOT USED	OLD- (2 or K) same NEW- NOT USED
*03	US-military VIZ AN/AMT-4B External Thermistor	OLD- (3 or L) same NEW- (N2)
*04	FINLAND-Vaisala (inside Finland)	OLD- (4 or M) same except in & out of Finland NEW- (L1)
*05	FRANCE-Mesural (inside France)	OLD- (5 or N) France-Metox NEW- (H1)
06	PORTUGAL-Canada Model IV NOT USED	OLD- (6 or O) same NEW- NOT USED
*07	W. GERMANY-Graw / Sprenger	OLD- (7 or P) same NEW- (C)
08	US-NOAA VIZ 403 MhZ Duct-type (corrections applied) NOT USED	OLD- (8 or Q) same NEW- NOT USED
*09	JAPAN-Meisei or Oki	OLD- (9 or R) same NEW- (G)
*10	E. GERMANY-Freiberg NOT USED	OLD- (A or /) same NEW- NOT USED
@11	UK-Meteorological Office	OLD- (B or S) same NEW- (O)
#12	USSR-Meteorite A-22 III and IV	OLD- (C) USSR-A-22 or RKZ NEW- (J1)
13	US-NOAA VIZ 403 MhZ Duct-type (corrections not applied)	OLD- (D or U) same NEW- (A)
*14	FINLAND-Vaisala (outside Finland)	OLD- (4 or M) same except in & out of Finland NEW- (L2)
*15	FRANCE-Mesural (ouside France)	OLD- (5 or N) France-Metox NEW- (H2)
16	AUSTRALIA-Phillips	OLD- NONE NEW- (I)
*17	AUSTRALIA-"Diamond Hinman" NOT USED	OLD- NONE NEW- NOT USED
*18	CANADA-Sangamo	OLD- NONE NEW- (K)
*19	CHINA-Shanghai 23 Radio Mfr.	OLD- (T) USSR-A22 or RKZ NEW- (P)
#20	USSR-Meteorite RKZ-2 and -5	OLD- (C) USSR-A22 or RKZ NEW- (J2)
#21	USSR-unknown (linear avg. of A-22 & RKZ corrections)	OLD- (C) USSR-A22 or RKZ NEW- (J)

TABLE R.2 INSTRUMENT TYPE (2 CHARACTERS) (cont.)

22	INDIA-Meteorological Service	OLD- NONE NEW- (D)
23	AUSTRIA-Elin	OLD- NONE NEW- (B)
24	N. KOREA-Jinyang (VIZ license)	OLD- NONE NEW- (E)
25	SWITZERLAND-Meteolabor	OLD- NONE NEW- (F)
26	CZECHOSLOVAKIA-Vinohrady	OLD- NONE NEW- (M)
27	US-NOAA VIZ MSS Solid State 1680 MhZ (Space Data Corp)	OLD- NONE NEW- (Q)
28 to 98	--- RESERVED ---	
99	UNSPECIFIED / UNKNOWN INSTRUMENT TYPE	OLD- ( ) UNSPECIFIED NEW- ( ) UNSPECIFIED OLD- (0) UNKNOWN NEW- (0) UNKNOWN

* - instrument types for which new correction tables are available
\# - new correction tables for separate 00Z and 12Z times
@ - new correction table is used but applies to Kew Mark IIb instrument and may not be up-to-date

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OFFICE NOTE 29
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NMC FORMAT FOR OBSERVATIONAL DATA (ADP REPORTS)

Automation Division Staff

SEPTEMBER 1973

Revision No. 2 to NMC Office Note No. 29.

The date of this revision is September 14, 1973 (9/14/73)

This revision incorporates corrections and expansions of various tables specifying quality marks for certain meteorological parameters which were previously unspecified. Two additional categories (07 and 08) have been added. Changes specified by Revision 1, October 10, 1969, have been incorporated in this revised edition. All previous editions will be obsolete.

Revised information covered by this revision will be implemented for all observational data processed on the IBM 360/195 computer system scheduled to become operational for NMC use in November 1973.

Information contained in NMC observational data (ADP reports) consists of combinations of characters from the FORTRAN character set given in APPENDIX A.

A report is composed of two main parts: (1) the report identification of fixed length (50 characters), and (2) the observational data of variable length. Each report is considered to be a logical record and contains 70 or more characters. The total number of characters in a report is evenly divisible by 10. Certain portions of the report are also evenly divisible by 10, and the character "X" is used for fill in these instances.

The information contained in the report identification is given in APPENDIX B. The last parameter in this group contains the total number of ten-character words in the report providing linkage from one report to the next when a group of reports is blocked into a physical record. The report identification is followed by the observational data which is formatted according to the categories described in APPENDIX C. Each category of available data is preceded by a ten-character category/counter group which is described in APPENDIX B. Where no data of a given category exist, the category/counter group also will be absent from the report. The final category/counter group in a report contains the ten characters "END REPORT". The total number of characters found in the category/counter group and the formatted data for that category is evenly divisible by 10, the character "X" being used for fill if necessary.

A sample RAWINSONDE report, in the prescribed format, is given in APPENDIX D.

A negative value of a parameter is indicated by a minus (-) sign located in the leftmost position. A positive value is unsigned. All numbers are right-justified with zero (0) fill.

In order to attain flexibility for adding new report types and/or new categories of data, programs should be written so that these additions will not necessitate reprogramming. Of course, to utilize the additional data, programming would be needed. This can simply be done by providing a check to ascertain if the report type and/or category can be handled. If not, the report or category should be bypassed, pending a change to utilize the additional data.

LIST OF APPENDICES

APPENDIX A

FORTRAN CHARACTER SET

The following FORTRAN characters may be used:

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, ∅, 1, 2, 3, 4, 5, 6, 7, 8, 9, and:

Character	Name of Character
	Blank (space)
-	Minus
*	Asterisk
/	Slash
$	Currency Symbol

APPENDIX B

REPORT IDENTIFICATION (50 Characters)

Character Number(s)	Parameter	Unit	Remarks
1 - 5	Latitude*	Hundredths of degree	Negative if in So. Hemisphere
6 - 10	West longitude*	Hundredths of degree	Values 00000 to 35999
11 - 16	Station identification	Alphanumeric	Left justified, blank fill
17 - 20	Observation time*	Hundredths of hour	-----
21 - 24	Reserved	-----	-----
25	25th Character	See description below	-----
26	26th Character	See description below	-----
27	27th Character	See description below	-----
28 - 30	Report type	Character from Table R.1	Always an integer
31 - 35	Station elevation*	Meter	Negative if below sea level
36 - 37	Instrument type*	Character from Table R.2	Always an integer
38 - 40	Total length of report	Number of ten-character words	-----

* Whenever value is "missing" or not applicable, all characters for the parameter will contain "9".

REPORT IDENTIFICATION (Continued)

CATEGORY/COUNTER GROUP (10 Characters)

Character Number(s)	Parameter
41 - 42	Category code figure from APPENDIX C.
43 - 45	(Number of ten-character words in the report which precedes the next category/counter group) plus one.*
46 - 47	Number of times data format for current category is repeated (i.e., the number of entries)
48 - 50	Total number of characters in current category (fill characters not counted)

* More simply stated : The relative position in report of the next category/counter group.

Report Identification

25th Character: Assigned to indicate special processing procedures.

Character	Meaning
0	Report has been adjusted to map time by an NMC updating procedure. Heights are referenced to some forecast level.
1	Report has been adjusted to map time by an NMC updating procedure. Heights are referenced to 1000 mb level at sea level.
8	Reported heights are referenced to 1000 mb level at sea level.
9*	Reported heights are referenced to some forecast level.

* Except for report type 061 (SIRS), this value means "missing" or not applicable.

26th Character: Assigned to indicate the information specifying that the standard isobaric surfaces were located by use of pressure equipment (44), or that pressure equipment was not available and that wind data were reported at altitudes approximating the standard isobaric surfaces (55).

Code Figure (44)	Code Figure (55)	Equipment
0		Pressure instrument associated with wind-measuring equipment.
1	5	Optical theodolite.
0	2	Radio theodolite.
3	7	Radar.
4		Pressure instrument associated with wind-measuring equipment but pressure element failed during ascent.
6		Not assigned.
8		Not assigned.
9		Not specified.

27th Character: Assigned to indicate results of processing.

Character	Meaning
0	All parameters in the report have been processed automatically (no manual intervention).
1	All parameters in the report have been obtained by manual intervention (no automatic processing).
2	All parameters in the report have been obtained by manual intervention and all parameters agree with automatically processed values.
3	All parameters in the report have been obtained by manual intervention and all parameters disagree with automatically processed values.
4	All parameters in the report have been obtained by manual intervention and one or more parameters disagree with automatically processed values.
5	One or more, but not all, parameters in the report have been obtained by manual intervention and all of these parameters agree with automatically processed values.
6	One or more, but not all, parameters in the report have been obtained by manual intervention and all of these parameters disagree with the automatically processed values.
7	Two or more, but not all, parameters in the report have been obtained by manual intervention and one or more parameters agree and one or more parameters disagree with the automatically processed values.
8	Not assigned.
9	Not specified.

TABLE B.1 REPORT TYPE (3 CHARACTERS)

Code Figure	Type	Remarks
	Upper-air	
	Land station	
011	By block and station number	
012	By call letters	
013	By latitude-longitude	
	Ocean station	
021	Fixed ship (OSV)	
022	Moving ship with name	
023	Moving ship without name	
031	Reconnaissance aircraft	
041	Aircraft report	
	Monitoring Bogus (manual)	
051	By latitude and longitude	
	Satellite	
061	SIRS (soundings)	
062	CLOUD (wind estimates)	
063	ATS (wind estimates)	
	Surface	
	Land station	
511	By block and station number	
512	By call letters	
513	By latitude-longitude	
	Ocean station	
521	Fixed ship (OSV)	
522	Moving ship with name	
523	Moving ship without name	
	Monitoring bogus (manual)	
551	By latitude and longitude	

TABLE R.2 INSTRUMENT TYPE (2 CHARACTERS)

Code Figure	Description	Previous Description
01	U.S.-ESSA External thermistor	(1 or J)-USWB External thermistor
02	U.S.-ESSA External thermistor (Plateau stations)	(2 or K)-USWB External thermistor (Plateau stations)
03	U.S.-AN/AMT-4 Military external thermistor	(3 or L)-U.S. Military external thermistor
04	Finland-Vaisala	(4 or M)-Vaisala
05	France-Metox	(5 or N)-Metox
06	Portugal-Canada Model IV	(6 or O)-Portugal (Canadian Model 4)
07	W. Germany-Graw H.50 (Corrected)	(7 or P)-Graw H.50
08	U.S.-ESSA 403 MhZ Duct-type (WBAN corrections applied at station)	(8 or Q)-USWB 403 MC Duct-type (WBAN corrections applied at station)
09	Japan-Code sending	(9 or R)-Japanese code sending
10	E. Germany-Freiberg	(A or /)-Freiberg
11	Britain-Kew Mark IIB	(B or S)-British Kew
12	USSR-A-22-III(IV)	(C or T)-USSR
13	U.S.-ESSA 403 MhZ Duct-type (WBAN correction not applied at station)	(D or U)-USWB 403 MC Duct-type (WBAN correction not applied at station)
98	NOAA-II (SIRS-B) Instrument 1	
97	NOAA-II (SIRS-B) Instrument 2	

APPENDIX C

FORMATS FOR THE CATEGORIES OF DATA

Whenever values are "missing", all characters allowed for that parameter will contain "9", except for quality marks which will always be as stated.

Category 01—Mandatory constant-pressure data (22 characters each entry)

The assumed order of constant-pressure data is as follows:

(1)	1000 mb	(11)	70 mb
(2)	850 mb	(12)	50 mb
(3)	700 mb	(13)	30 mb
(4)	500 mb	(14)	20 mb
(5)	400 mb	(15)	10 mb
(6)	300 mb	(16)	7 mb
(7)	250 mb	(17)	5 mb
(8)	200 mb	(18)	3 mb
(9)	150 mb	(19)	2 mb
(10)	**100 mb**	**(20)**	**1 mb**

Assuming this order, the entry in the category/counter group which gives the number of times a format is repeated will be the number corresponding to the highest level (lowest pressure) for which there is data.

No. of characters	Parameter	Unit
5	Geopotential	Meter
4	Temperature	Tenth of degree C
3	Dewpoint depression	" " " "
3	Wind direction	Degree
3	Wind speed	Knot
1	Quality mark for geopotential	Character from Table Q.A
1	" " " temperature	" " " Q.A
1	" " " depression	" " " Q.C
1	" " " wind	" " " Q.A

Category 02—Temperature/dewpoint depression at variable pressure (15 characters each entry)

No. of characters	Parameter	Unit
5	Pressure	Tenth of millibar
4	Temperature	Tenth of degree C
3	Dewpoint depression	" " " "
1	Quality mark for pressure	Character from Table Q.B
1	" " " temperature	" " " Q.A
1	" " " depression	" " " Q.C

Note 1 - First entry will always be surface data, values set "missing" if not available.
Note 2 - Entries will be ordered by decreasing pressure.

Category 03—Wind at variable pressure (13 characters each entry)

No. of characters	Parameter	Unit
5	Pressure	Tenth of millibar
3	Wind direction	Degree
3	Wind speed	Knot
1	Quality mark for pressure	Character from Table Q.B
1	Quality mark for wind	Character from Table Q.A

Note 1 - First entry will always be surface data, values set "missing" if not available.
Note 2 - Entries will be ordered by decreasing pressure.

Category 04—Wind at variable height (13 characters each entry)

No. of characters	Parameter	Unit
5	Geopotential	Meter
3	Wind direction	Degree
3	Wind speed	Knot
1	Quality mark for geopotential	Character from Table Q.B
1	Quality mark for wind	Character from Table Q.A

Note 1 - First entry will always be surface data, values set "missing" if not available.
Note 2 - Entries will be ordered by increasing height.

Category 05—Tropopause data (22 characters each entry)

No. of characters	Parameter	Unit
5	Pressure	Tenth of millibar
4	Temperature	Tenth of degree C
3	Dewpoint depression	Tenth of degree C
3	Wind direction	Degree
3	Wind speed	Knot
1	Quality mark for pressure	Character from Table Q.B
1	" " " temperature	" " " Q.A
1	" " " depression	" " " Q.C
1	" " " wind	" " " Q.A

Note 1 - Entries will be ordered by decreasing pressure.

Category 06—Aircraft (22 characters each entry)

No. of characters	Parameter	Unit
5	Pressure altitude	Meter
4	Temperature	Tenth of degree C
3	Dewpoint depression	Tenth of degree C
3	Wind direction	Degree
3	Wind speed	Knot
1	Quality mark for pressure altitude	Character from Table Q.6
1	Quality mark for temperature	" " " Q.6
1	" " " depression	" " " Q.6
1	" " " wind	" " " Q.6c

Category 07 - Cloud cover (10 characters each entry)

No. of characters	Parameter	Unit
5	Pressure	Tenth of millibar
3	Amount of cloudiness	Percent
1	Quality mark for pressure	Character, Table Q.7
1	Quality mark for cloud amount	Character, Table Q.7

Note 1 - Entries will be ordered by decreasing pressure.
Note 2 - Pressure and amount will both have values of zero to indicate no cloud cover (clear)

Category 08 - Additional data (10 characters each entry)

No. of characters	Parameter	Unit
5	Data given by specifications in Table 101*.	Variable
3	Form of additional data in report.	Code figure from Table 101.
1	Indicator for data specification.	Character from Table Q.8
1	Indicator for form of additional data.	Character from Table Q.8a

Note - entries will be ordered by increasing code figure.
*Value set "missing" if not applicable.

Category 51 - Surface data (60 characters each entry)

No. of characters	Parameter	Unit
5	Sea-level pressure	Tenth of millibar
5	Station pressure**	" " "
3	Wind direction	Degree
3	Wind speed	Knot
4	Air temperature	Tenth of degree C
3	Dewpoint depression	" " " "
4	Maximum temperature	" " " "
4	Minimum "	" " " "
1	Quality mark for sea-level pressure	Character from Table Q.51
1	Quality mark for station pressure	" " " "
1	Quality mark for wind	" " " "
1	Quality mark for air temperature	" " " "
1	Quality mark for depression	" " " "
3	Horizontal visibility	Code figure from Code Table 3
3	Present weather	Code figure from Code Table 4
2	Past weather	Code figure from Code Table 5
2	Fraction of the celestial dome covered by cloud (N)	Code figure from Code Table 1
2	Fraction of the celestial dome covered by all the C_L (or C_M) cloud present (N_h)	Code figure from Code Table 1
2	Clouds of genera Sc, St, Cu, Cb (C_L)	Code figure from Code Table 8
2	Height above ground of the base of the cloud (h)	Code figure from Code Table 9
2	Clouds of genera Ac, As, Ns (C_M)	Code figure from Code Table 10
2	Clouds of genera Ci, Cc, Cs (C_H)	Code figure from Code Table 11
1	Characteristic of pressure tendency during the 3 hours preceding the time of observation (a)*	Code figure from Code Table 12
3	Amount (magnitude)of the pressure tendency*	Tenth of millibar or Code figure from Table 14

* When the characteristic of pressure tendency is 9 and the amount of the pressure tendency is not 999, the tendency is a 24-hour pressure change code figure from Code Table 14.

** See note on following page.

** Reference Category 51, station pressure ($P_oP_oP_oP_oP_o$), the following information describes the method for also accommodating the possible values encoded in the sea level pressure entry (PPP) in the pressure-temperature group (PPPTT).

Characters	Level	Unit
$P_oP_oP_oP_oP_o$	station	tenth of millibar
21PPP	1000 gpm	tenth of millibar
22PPP	2000 gpm	tenth of millibar
23PPP	500 gpm	tenth of millibar
25PPP	500 mb	geopotential meter (gpm)
26PPP	station	tenth of millibar
27PPP	700 mb	geopotential meter
28PPP	850 mb	geopotential meter
29PPP	unknown	(as reported)
99999	missing	

Category 52 - Surface data (40 characters each entry)

No. of characters	Parameter	Unit
4	Amount of precipitation past 6 hours	Hundredths of an inch
3	Total depth of snow on ground	Inch
4	Total precipitation past 24 hours	Hundredths of an inch
1	Time precip. began or ended	Code figure from Code Table 16
2	Period of waves	Second
2	Height of waves	Half yard (1 1/2 feet)
2	Direction from which swell waves are moving	Code figure from Code Table 23
2	Period of swell waves	Code figure from Table 24
2	Height of swell waves	Half yard (1 1/2 feet)
4	Sea surface temperature	Tenth of degree C
2	Special phenomena, general*	Code figure from Code Table 21
2	Special phenomena, detailed*	Code figure from Code Table 22
1	Ship's course	Code figure from Code Table 0700
2	Ship's average speed	Code figure from Code Table 4451
7	Reserved for future use	

*Special phenomena, general, is missing (99) only if special phenomena, detailed, is missing (99).

Definitions of Symbols Used in TABLE 101

dd = true direction in tens of degrees (hundreds and tens digit) from which the wind is blowing at the specified level.

fff = wind speed in knots, or knots plus 500.

$i_s i_s$ = stability index indicating the degree of stability of the layer or air extending from a level near the surface of the earth to the 500-mb surface.

PP = pressure in tens of millibars, or in whole millibars, of the standard isobaric level, except that 99 means surface level, 66 and 77 mean maximum wind level, 88 means tropopause level, and 00 means 1000-mb level. (See note for P_1P_1, below)

P_1P_1 = pressure in tens of millibars, or whole millibars, of the lower limit (with respect to altitude) of the stratum. (Note: in PART B, up to and including 100 mb, these parameters are in tens of millibars. In PART D, above 100 mb, these parameters are in whole millibars).

P_2P_2 = Pressure in tens of millibars, or whole millibars, of the upper limit (with respect to altitude) of the stratum. (See note for P_1P_1, above).

$v_a v_a$ = Absolute value of the vector difference between the maximum wind and the wind blowing at 3,000 feet above the level of the maximum wind.

$v_b v_b$ = Absolute value of the vector difference between the maximum wind and the wind blowing at 3,000 feet below the level of the maximum wind.

PPP = Pressure in whole millibars, or tenths of millibars, of the significant level. (Note: in PART B, up to and including 100 mb, these parameters are in millibars. In PART D, above 100 mb, these parameters are in tenths of millibars).

Additional Entries to Table 101
NMC Office Note 29 (September 1973)

code figure	Specification
013	Pressure (mb) corresponding to pressure altitude given in the report....00PPP
014	Station block and index (WMO) number (with type 512 surface reports)
015	Cloud albedo, aa, %, and cloud pressure level, ppp, mb, reported as "aappp"
016	Total albedo, AA, %, and flux, FFF, watts m-2, reported as "AAFFF"
017	Surface albedo, A_SA_S, %, and total water vapor, VVV, cm X 100, reported as "A_SA_S VVV"
018	Surface skin temperature, TT, tens and unit digits, degrees K; and liquid water in clouds, LLL, mm, X 100 reported as "TTLLL"
019	Period of time (pppp) in hundreds of hours over which observation was made....0pppp
020	Altimeter setting (QNH) in tenths of mb (PPPPP)

TABLE 101

Code Figure	Specification
001	Stability index ... $000i_si_s$.
002	Low-level Mean Wind for surface to 5,000-foot layer in knots ... ddfff.
003	Low-level Mean Wind for 5,000- to 10,000-foot layer in knots ... ddfff.
004	Vertical Wind Shear data in knots ... $4v_bv_bv_av_a$ (99 is used when solidi (//) were encoded for v_bv_b or v_av_a).
005	Verifies 77999 (maximum wind not observed) was encoded.
006	Verifies 88999 (tropopause not observed) was encoded.
007	Stratum has superadiabatic lapse rate between following levels ... $0P_1P_1P_2P_2$.
008	Geopotential was deleted in report at level ... 000PP.
009	Temperature was deleted in report at level ... 000PP (or 00PPP as appropriate).
010	Depression of the Dew Point was deleted in report at level ... 000PP (or 00PPP as appropriate).
011	Wind Direction and/or Speed was deleted in report at level ... 000PP (or 00PPP as appropriate).
012	Pressure was deleted in report at level ... 000PP (or 00PPP as appropriate).
032	N_h (1 digit), C_l (2 digits), and h (2 digits) from the cloud data (41414) grpup. (See Code Tables 1, 8, and 9 for meanings).
033	C_m (2 digits) and C_h (3 digits) from the cloud data (41414) group. (See Code Tables 10 and 11 for meaning).

TABLE 101, continued

Code Figure	Specification
034	Verifies DLAD (report not ready for transmission) was encoded.
035	Verifies FINO (report missing, will not be filed for transmission) was encoded.
036	Verifies MISG (report missing but no further information available) was encoded.
037	Verifies PISE (unfavorable sea conditions) was encodéd.
038	Verifies PIWE (unfavorable weather conditions) was encoded.
039	Verifies XMTD (all data for the ascent has been transmitted previously) was encoded.
40	Report not filed.
41	
42	Ground equipment failure.
43	Observation delayed.
44	Power failure.
45	Unfavorable weather conditions.
46	Low maximum altitude (less than 500 meters above ground).
47	Leaking balloon.
48	Ascent not authorized for this period.
49	Alert.
50	Ascent did not extend above the 100-mb level.
51	Balloon forced down by icing condition.
52	Balloon forced down by precipitation.
53	Atmospheric interference.
54	Local interference.
55	Fading signal.[1]
56	Weak signal.[1]
57	Preventive maintenance.
58	Flight equipment (transmitter, balloon, attachments, etc.) failure.
59	Any reason not listed above.
65	Altitude and temperature data are doubtful between following levels . . . . . $0P_1P_1P_1P_1$.
66	Altitude levels are doubtful between following levels . . . . . $0P_1P_1P_1P_1$.
67	Temperature data are doubtful between following levels . . . . . $0P_1P_1P_1P_1$.
68	Depression of the Dew Point is Missing Between Following Levels . . . . . $0P_1P_1P_1P_1$.

TABLE 101, continued

Code Figure	Specification
069	Depression of the Dew Point is missing at the level ... 000PP (or 00PPP as appropriate).
078	Corrected Tropopause Data (Section 3) enterd in report.
079	Corrected Maximum Wind (section 4) entered in report.
080	Corrected entire report (PARTs A, B, C, and D entered in report)
081	Corrected report for PARTS A and B entered in report.
082	Corrected report for PARTS C and D entered in report.
083	Corrected data for mandatory levels in report.
084	Corrected data for significant levels entered in report.
085	Corrected report for one with minor error(s) entered in report.
086	Significant Levels, not included in original report, entered in report.
087	Corrected data, for Surface, entered in report.
088	Corrected Additional Data groups entered in report.
090	Extrapolated altitude data entered in report at level ... 000PP
091	Extrapolated surface data entered in report.

TABLE Q.A

Character		Meaning
Auto.	Manual	
A	I	Passed vertical consistency check with tight limits.
B	J	Failed vertical consistency check and has not been recomputed.
C	K	Failed vertical consistency check and recomputed.
D	L	Failed vertical consistency check with tight limits and passed with loose limits.
E	M	(Not assigned)
F	N	Has been checked but did not pass vertical consistency check with loose limits.
G	O	(Not assigned)
blank	$	Not specified.

TABLE Q.B

Character Auto.	Character Manual	Meaning
Q	Y	Base of stratum with missing data.
R	Z	Top of stratum with missing data.
T	1	Tropopause level (reported).
U	2	Surface data from PARTs A and B do not agree, PART A or PART B chosen by test.
V	3	Surface data from PARTs A and B agree.
W	4	Maximum wind level (reported) is not at the terminating level.
X	5	Maximum wind level (reported) is at the terminating level.
blank	$	Not specified.

Note: The characters for manual will be set whenever a combination of automatic and manual exists.

TABLE Q.C

Character		Meaning
Auto.	Manual	
blank	$	Not Specified

TABLE Q.6

Character	Meaning
blank (space)	Not specified.

TABLE Q.6c

Character	Meaning
blank (space)	Not specified.
A	Known to be an instantaneous (spot) wind measurement.
B	Known to be an average wind condition over a portion of flight.
C	Probably an instantaneous (spot) wind measurement.

TABLE Q.7

Character	Meaning
blank (space)	Not specified.

TABLE Q.8

Character	Meaning
blank (space)	Not specified.
A	Applies to levels at or below 100 mb (PART A) in TEMP and TEMP SHIP.
B	Applies to levels at or below 100 mb (PART B) in TEMP and TEMP SHIP.
C	Applies to levels above 100 mb (PART C) in TEMP and TEMP SHIP.
D	Applies to levels above 100 mb (PART D) in TEMP and TEMP SHIP.
I	Applies to levels at or below 100 mb (PART A) in PILOT and PILOT SHIP.
J	Applies to levels at or below 100 mb (PART B) in PILOT and PILOT SHIP.
K	Applies to levels above 100 mb (PART C) in PILOT and PILOT SHIP.
L	Applies to levels above 100 mb (PART D) in PILOT and PILOT SHIP.

TABLE Q.8a

Character	Meaning
blank (space)	Processed automatically.
$	Processed with manual assistance.

Code Tables 1*,3, 4, 5, 8*, 9*, 10*, 11*, 12, 14, 16, WMO 0700, WMO 4451, 21, 22(all), 23, and 24* have been taken from Federal Meteorological Handbook No. 2, Synoptic Code (Standards and Procedures for the Coding of Synoptic Reports), January 1, 1969.

Code Table 1

[WMO Code 2700]

Symbol N=Fraction of the Celestial Dome Covered by Cloud

Symbol N_h=Fraction of the Celestial Dome Covered by All the C_L (or C_M) Cloud present

Symbol N_s=Fraction of the Celestial Dome Covered by an Individual Cloud Layer or Mass

Code Figure	Fraction Covered in Tenths	Fraction Covered in Oktas
0	Zero	Zero
1	1 or less but not zero	1 Okta or less but not zero
2	2 and 3	2
3	4	3
4	5	4
5	6	5
6	7 and 8	6
7	9 or more, but not 10	7 or more, but not 8
8	10	8
9	Celestial dome obscured, or cloud amount can not be estimated.	
10	/ was encoded in report.	

*This Table originally is an 11-character code (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, /). However, the number "10" has been used whenever "/" appeared in the original version.

Code Table 3

[WMO Code 4377]

Symbol VV=Horizontal Visibility

Code Figure	Statute Miles	Yards	Kilometers
00	Less than 1/16	Less than 110.	Less than 0.1
01	1/16	110	0.1
02	1/8	220	0.2
03	3/16	330	0.3
04	1/4	440	0.4
05	5/16	550	0.5
06	3/8	660	0.6
07	7/16	770	0.7
08	1/2	880	0.8
09	9/16	990	0.9
10	5/8	1,100	1.0
11	11/16	1,210	1.1
12	3/4	1,320	1.2
13	13/16	1,430	1.3
14	7/8	1,540	1.4
15	15/16	1,650	1.5
16	1	1,760	1.6
17	1 1/16	1,870	1.7
18	1 1/8	1,980	1.8
19	1 3/16	2,090	1.9
20	1 1/4	2,200	2.0
21	1 5/16	2,310	2.1
22	1 3/8	2,420	2.2
23	1 7/16	2,530	2.3
24	1 1/2	2,640	2.4
25	1 9/16	2,750	2.5
26	1 5/8	2,860	2.6
27	1 11/16	2,970	2.7
28	1 3/4	3,080	2.8
29	1 13/16	3,190	2.9
30	1 7/8	3,300	3.0
31	1 15/16	3,410	3.1
32	2	3,520	3.2
33	2 1/16	3,630	3.3
34	2 1/8	3,740	3.4
35	2 3/16	3,850	3.5
36	2 1/4	3,960	3.6
37	2 5/16	4,070	3.7
38	2 3/8	4,180	3.8
39	2 7/16	4,290	3.9
40	2 1/2	4,400	4.0
41	2 9/16	4,510	4.1
42	2 5/8	4,620	4.2
43	2 11/16	4,730	4.3
44	2 3/4	4,840	4.4
45	2 13/16	4,950	4.5
46	2 7/8	5,060	4.6
47	2 15/16	5,170	4.7
48	3	5,280	4.8
49	3 1/16	5,390	4.9
50	3 1/8	5,500	5.0
51	Not specified.		
52	Not specified.		
53	Not specified.		
54	Not specified.		
55	Not specified.		
56	3 3/4	6,600	6
57	4 1/8	7,700	7
58	5	etc	8
59	5 5/8		9
60	6 1/4		10
61	6 7/8		11
62	7 1/2		12
63	8 1/8		13
64	8 3/4		14
65	9 3/8		15
66	10		16
67	10 5/8		17
68	11 1/4		18
69	11 7/8		19
70	12 1/2		20
71	13 1/8		21
72	13 3/4		22
73	14 3/8		23
74	15		24
75	15 5/8		25
76	16 1/4		26
77	16 7/8		27
78	17 1/2		28
79	18 1/8		29
80	18 3/4		30
81	21 7/8		35
82	25		40
83	28 1/8		45
84	31 1/4		50
85	34 3/8		55
86	37 1/2		60
87	40 5/8		65
88	43 3/4		70
89	Greater than 43 3/4.		Greater than 70.
90		Less than 55	Less than 50 m.
91		55	50 m.
92	1/8	220	200 m.
93	5/16	550	500 m.
94	5/8	1,100	1 km.
95	1 1/4	2,200	2
96	2 1/2	4,400	4
97	6 1/4		10
98	12 1/2		20
99	31 1/4 or more		50 or more.

NOTES:

(1) The values given are discrete values (i.e., not ranges). If the observed visibility is between two of the reportable distances as given in the table, the code figure of the lower reportable distance shall be reported.

(2) Only the code figures 00-89 shall be used in reports from land stations.

(3) In reporting visibility at sea the decade 90-99 shall be used.

Code Table 4

[WMO Code 4677]

Symbol ww=Present Weather

00—49: No precipitation at the station at the time of observation.

00—19: No precipitation, fog, ice fog (except for 11 and 12), duststorm, drifting or blowing snow at the station at the time of observation or, except for 09 and 17, during the preceding hour.

No meteors except photometeors:

- 00 Cloud development not observed or not observable.
- 01 Clouds generally dissolving or becoming less developed.
- 02 State of sky on the whole unchanged.
- 03 Clouds generally forming or developing.

(Characteristic change of the state of sky during past hour.)

Haze, dust, sand or smoke:

- 04 Visibility reduced by smoke, e.g., veldt or forest fires, industrial smoke or volcanic ashes.
- 05 Haze.
- 06 Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation.
- 07 Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen: or, in the case of ships, blowing spray at the station.
- 08 Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour, or at the time of observation, but no duststorm or sandstorm.
- 09 Duststorm or sandstorm within sight at the time of observation or at station during the preceding hour.

10 Light fog.[1] (Vis. 1,100 yds. or more.)

11, 12 Patches of / More or less continuous shallow fog or ice fog at the station, whether on land or sea, not deeper than about 6 feet on land or 33 feet at sea. (Apparent vis. less than 1,100 yds.)

13 Lightning visible, no thunder heard.

14 Precipitation within sight, but not reaching the ground or the surface of the sea.

15 Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e., estimated to be more than 3.1 miles) from the station.

16 Precipitation within sight, reaching the ground or the surface of the sea near to but not at the station.

17 Thunderstorm, but no precipitation at the time of observation.

18 Squalls at or within sight of the station during the preceding hour or at the time of observation.

19 Funnel cloud(s) (i.e., tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation.

20—29: Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation.

Not falling as shower(s):

- 20 Drizzle (not freezing) or snow grains
- 21 Rain (not freezing)
- 22 Snow
- 23 Rain and snow or ice pellets (type a)
- 24 Freezing drizzle or freezing rain

25 Shower(s) of rain.

26 Shower(s) of snow, or of rain and snow.

27 Shower(s) of hail,[2] or of rain and hail.[2]

28 Fog or ice fog. (Vis. less than 1,100 yds.).

29 Thunderstorm (with or without precipitation).

30—39: Duststorm, sandstorm, drifting or blowing snow.

- 30, 31 Slight or moderate duststorm
- 32 or sandstorm

Has decreased during the preceding hour. / No appreciable change during the preceding hour. / Has begun or has increased during the preceding hour.

- 33, 35 Severe duststorm or sandstorm
- 34

Has decreased during the preceding hour. / No appreciable change during the preceding hour. / Has begun or has increased during the preceding hour.

36 Slight or moderate drifting snow, generally low. (Less than 6 ft.)

37 Heavy drifting snow, generally low. (Less than 6 ft.)

38 Slight or moderate blowing snow, generally high. (6 ft. or more)

39 Heavy blowing snow, generally high. (6 ft. or more)

40—49: Fog or ice fog at the time of observation. (Vis. less than 1,100 yds.)

40 Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer.

41 Fog or ice fog in patches

- 42 Fog or ice fog, sky discernible
- 43 Fog or ice fog, sky not discernible

Has become thinner during the preceding hour.

- 44 Fog or ice fog, sky discernible
- 45 Fog or ice fog, sky not discernible

No appreciable change during the preceding hour.

Code Table 4—Continued

46	Fog or ice fog, sky discernible	Has begun or has become thicker during the preceding hour.
47	Fog or ice fog, sky not discernible	
48	Fog, depositing rime, sky discernible.	
49	Fog, depositing rime, sky not discernible	

50—99: Precipitation at the station at the time of observation

50—59: Drizzle.

50	Drizzle, not freezing, intermittent	Slight at time of observation.
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	Moderate at time of observation.
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	Heavy (dense) at time of observation.
55	Drizzle, not freezing, continuous	
56	Drizzle, freezing, slight.	
57	Drizzle, freezing, moderate or heavy (dense).	
58	Drizzle and rain, slight.	
59	Drizzle and rain, moderate or heavy.	

60—69: Rain.

60	Rain, not freezing, intermittent	Slight at time of observation.
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	Moderate at time of observation.
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	Heavy at time of observation.
65	Rain, not freezing, continuous	
66	Rain, freezing, slight.	
67	Rain, freezing, moderate or heavy.	
68	Rain or drizzle and snow, slight.	
69	Rain or drizzle and snow, moderate or heavy.	

70—79: Solid precipitation not in showers

70	Intermittent fall of snow flakes	Slight at time of observation.
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	Moderate at time of observation.
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	Heavy at time of observation.
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog).	
77	Snow grains (with or without fog).	
78	Isolated starlike snow crystals (with or without fog).	
79	Ice pellets (type a) (sleet, U.S. definition).	

80—99: Showery precipitation, or precipitation with current or recent thunderstorm

80	Rain shower(s), slight.	
81	Rain shower(s), moderate or heavy.	
82	Rain shower(s), violent.	
83	Shower(s) of rain and snow mixed, slight.	
84	Shower(s) of rain and snow mixed, moderate or heavy.	
85	Snow shower(s), slight.	
86	Snow shower(s), moderate or heavy.	
87	Shower(s) of snow pellets, or ice pellets (type b) with or without rain or rain and snow mixed.	Slight.
88		Moderate or heavy.
89	Shower(s) of hail,[2] with or without rain or rain and snow mixed, not associated with thunder.	Slight.
90		Moderate or heavy.
91	Slight rain at time of observation.	Thunderstorm during the preceding hour but not at time of observation.
92	Moderate or heavy rain at time of observation.	
93	Slight snow or rain and snow mixed or hail [3] at time of observation.	
94	Moderate or heavy snow, or rain and snow mixed or hail [3] at time of observation.	
95	Thunderstorm, slight or moderate, without hail [3] but with rain and/or snow at time of observation.	Thunderstorm at time of observation.
96	Thunderstorm, slight or moderate, with hail [3] at time of observation.	
97	Thunderstorm, heavy, without hail, [3] but with rain and/or snow at time of observation.	
98	Thunderstorm combined with duststorm or sandstorm at time of observation.	Thunderstorm at time of observation.
99	Thunderstorm, heavy with hail [3] at time of observation.	

[1] The U.S. term, "light fog" is synonymous with the European term "mist."

[2] Refers to "hail" only.

[3] Refers to snow pellets, ice pellets (type b), and hail.

NOTE.—With respect to precipitation, "at the station" means "at the point where the observation is normally taken."

Code Table 5

[WMO Code 4500]

Symbol W=Past Weather

Code Figure	Weather
0	Cloud covering ½ or less of the celestial dome throughout the appropriate period.
1	Cloud covering more than ½ of the celestial dome during part of the appropriate period and covering ½ or less during part of the period.
2	Cloud covering more than ½ of the celestial dome throughout the appropriate period.
3	Sandstorm, duststorm, or blowing snow.
4	Fog, ice fog, thick haze or thick smoke.
5	Drizzle.
6	Rain.
7	Snow, rain and snow mixed, or ice pellets.
8	Shower(s).
9	Thunderstorm, with or without precipitation.

NOTE.—The term "ice pellets" is synonymous with the U.S. term "sleet."

Code Table 8

[WMO Code 0513]

Symbol C_L=Clouds of Genera Sc, St, Cu, Cb

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_L clouds	No Stratocumulus, Stratus, Cumulus, or Cumulonimbus.
1	Cumulus humilis or Cumulus fractus other than of bad weather,[1] or both.	Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than of bad weather,[1] or both.
2	Cumulus mediocris or congestus, with or without Cumulus of species fractus or humilis, or Stratocumulus, all having their bases at the same level.	Cumulus of moderate or strong vertical extent generally with protuberances in the form of domes or towers, either accompanied or not by other Cumulus or by Stratocumulus; all having their bases at the same level.
3	Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus.	Cumulonimbus, the summits of which, at least partially, lack sharp outlines, but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present.
4	Stratocumulus cumulogenitus.	Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present.
5	Stratocumulus other than Stratocumulus cumulogenitus.	Stratocumulus not resulting from the spreading out of Cumulus.
6	Stratus nebulosus or Stratus fractus other than of bad weather,[1] or both.	Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus fractus of bad weather.[1]
7	Stratus fractus or Cumulus fractus of bad weather,[1] or both (pannus), usually below Altostratus or Nimbostratus.	Stratus fractus of bad weather [1] or Cumulus fractus of bad weather,[1] or both (pannus), usually below Altostratus or Nimbostratus.
8	Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels.	Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus.
9	Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus.	Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil, either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus.
10	C_L clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.	Stratocumulus, Stratus, Cumulus, or Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.

[1] "Bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.

Code Table 9

[WMO Code 1600]

Symbol h=Height above Ground of the Base of the Cloud

Code Figure	Height in Feet	Height in Meters
0	0– 149	0– 49
1	150– 299	50– 99
2	300– 599	100– 199
3	600– 999	200– 299
4	1, 000–1, 999	300– 599
5	2, 000–3, 499	600– 999
6	3, 500–4, 999	1, 000–1, 499
7	5, 000–6, 499	1, 500–1, 999
8	6, 500–7, 999	2, 000–2, 499
9	8, 000 or higher, or no clouds.	2, 500 or higher, or no clouds.
10	/ was encoded	/ was encoded

NOTES: (1) The heights (in feet) given in this code table approximately correspond to those given in WMO Code 1600 and to those given in the ninth decade (i.e., code figures 90-99) of WMO Code 1577.

(2) The term "height above ground" is considered as being the height above the official aerodrome elevation or above station level at a non-aerodrome station.

Code Table 10

[WMO Code 0515]

Symbol C_M=Clouds of Genera Ac, As, Ns

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_M clouds	No Altocumulus, Altostratus or Nimbostratus.
1	Altostratus translucidus.	Altostratus, the greater part of which is semitransparent; through this part the sun or moon may be weakly visible as through ground glass.
2	Altostratus opacus or Nimbostratus.	Altostratus, the greate part of which is sufficiently dense to hide the sun or moon, or Nimbostratus.
3	Altocumulus translucidus at a single level.	Altocumulus, the greater part of which is semitransparent, the various elements of the cloud change only slowly and are all at a single level.
4	Patches (often lenticular) of Altocumulus translucidus, continually changing and occuring at one or more levels.	Patche (often in the form of almonds or fishes) of Altocumulus, the greater part of which is semitransparent; the clouds occur at one or more levels and the elements are continually changing in appearance.
5	Altocumulus translucidus in bands, or one or more layer of Altocumulus translucidus or opacus, progressively invading the sky; these Altocumulus clouds generally thicken as a whole.	Semitransparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layers (semitransparent or opaque), progressively invading the sky; these Altocumulus cloud generally thicken as a whole.
6	Altocumulus cumulogenitus (or cumulonimbogenitus).	Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus).
7	Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus.	Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus.
8	Altocumulus castellanus or floccus.	Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts.
9	Altocumulus of a chaotic sky, generally at several levels.	Altocumulus of a chaotic sky, generally at several levels.
10	C_M clouds invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or because of a continuous layer of lower clouds.	Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Code Table 11

[WMO Code 0509]

Symbol C_H=Clouds of Genera Ci, Cc, Cs

Code Figure	Technical Specifications	Nontechnical Specifications
0	No C_H clouds___	No Cirrus, Cirrocumulus, or Cirrostratus.
1	Cirrus fibratus, sometimes uncinus, not progressively invading the sky.	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.
2	Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus.	Dense Cirrus in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts.
3	Cirrus spissatus cumulonimbogenitus.	Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus.
4	Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole.	Cirrus in the form of hooks or of filaments or both, progressively invading the sky; they generally become denser as a whole.
5	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not reach 45° above the horizon.	Cirrus (often in bands converging towards one or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole, but the continuous veil does not reach 45° above the horizon.
6	Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole; the continuous veil extends more than 45° above the horizon, without the sky being totally covered.	Cirrus (often in bands converging towards one or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45° above the horizon, without the sky being totally covered.
7	Cirrostratus covering the whole sky.	Veil of Cirrostratus covering the celestial dome.
8	Cirrostratus not progressively invading the sky and not entirely covering it.	Cirrostratus not progressively invading the sky and not completely covering the celestial dome.
9	Cirrocumulus alone, or Cirrocumulus predominant among the C_H clouds.	Cirrocumulus alone, or Cirrocumulus accompanied by Cirrus or Cirrostratus, or both, but Cirrocumulus is predominant.
10	C_H clouds invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or because of a continuous layer of lower clouds.	Cirrus, Cirrocumulus, and Cirrostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Code Table 14

[WMO Code 470]

Symbol $p_{24}p_{24}$=Amount of Pressure Change at the Station Level During Past 24 Hours

Code Figure	Amount of Pressure Change
00	No change; pressure same as 24 hours ago
01	Pressure has risen 0.1 mb
02	" " " 0.2 mb
03	" " " 0.3 mb
04	" " " 0.4 mb
05	" " " 0.5 mb
06	" " " 0.6 mb
07	" " " 0.7 mb
08	" " " 0.8 mb
09	" " " 0.9 mb
10	" " " 1.0 mb
11	" " " 1.1 mb
12	" " " 1.2 mb
etc.	etc.
38	" " " 3.8 mb
39	" " " 3.9 mb
40	" " " 4 mb
41	" " " 5 mb
42	" " " 6 mb
43	" " " 7 mb
44	" " " 8 mb
45	" " " 9 mb
46	" " " 10 mb
47	" " " 11 mb
48	" " " 12 mb
59	" " " 13 mb or more
50	Not used
51	Pressure has fallen 0.1 mb
52	" " " 0.2 mb
53	" " " 0.3 mb
54	" " " 0.4 mb
55	" " " 0.5 mb
56	" " " 0.6 mb
57	" " " 0.7 mb
58	" " " 0.8 mb
59	" " " 0.9 mb
60	" " " 1.0 mb
61	" " " 1.1 mb
62	" " " 1.2 mb
etc.	etc.
88	" " " 3.8 mb
89	" " " 3.9 mb
90	" " " 4 mb
91	" " " 5 mb
92	" " " 6 mb
93	" " " 7 mb
94	" " " 8 mb
95	" " " 9 mb

Code Table 12

[WMO Code 0200]

Symbol a = Characteristic of Pressure Tendency During the 3 Hours Preceding the Time of Observation

Code Figure	Description	
0	Increasing, then decreasing; atmospheric pressure the same or higher than 3 hrs. ago.	
1	Increasing, then steady; or increasing, then increasing more slowly	Atmospheric pressure now higher than 3 hours ago.
2	Increasing (steadily or unsteadily)	
3	Decreasing or steady, then increasing; or increasing, then increasing more rapidly	
4	Steady, atmospheric pressure the same as 3 hrs. ago.	
5	Decreasing, then increasing; atmospheric pressure the same or lower than 3 hrs. ago.	
6	Decreasing, then steady; or decreasing then decreasing more slowly	Atmospheric pressure now lower than 3 hours ago.
7	Decreasing (steadily or unsteadily)	
8	Steady or increasing, then decreasing; or decreasing then decreasing more rapidly	
9	Indicator figure	

NOTE: Code figure 9 is used to signify that the amount of pressure tendency is the 24-hour pressure change ($p_{24}p_{24}$) (See Code Table 14).

Code Table 16

Symbol R_t=Time Precipitation Began or Ended [1]

Code Figure	Time Began or Ended	Code Figure	Time Began or Ended
0	No precipitation.	6	5 to 6 hours ago.
1	Less than 1 hr. ago	7	6 to 12 hours ago.
2	1 to 2 hours ago.	8	More than 12 hours ago.
3	2 to 3 hours ago.		
4	3 to 4 hours ago.	9	Unknown.
5	4 to 5 hours ago.		

[1] In relation to the "official time of observation."

(NOTE: This Code Table is used by the United States and Canada.)

Code Table 21

[WMO Code 483]

Symbol S_PS_P=Special Phenomena Code, General Description

"General" description with "detailed" code used (Symbol of detailed code shown in parentheses)

	00–09: Ground and Miscellaneous Phenomena
00	Average depth of deepest snowdrifts (in feet). (nn)
01	Depth of newly fallen snow during past 6 hours (in whole inches). (nn)
02	Water equivalent of snow and/or ice on ground (tenths of an inch). (nn)
03	Water equivalent of snow and/or ice on ground (in whole inches). (nn)
04	Total amount of snow and/or ice on ground (in whole inches). (nn)
05	State of ground. (EE)
06	Frost. (tt, zz)
07	Glaze, average rate of accrual per hour (in tenths of an inch). (nn)
08	State of sea, or Period of sea swell. (S_aS_a or K_pK_p)
09	Water temperature in whole degrees (Farenheit or Celsius). (nn)
	10–15: Clouds
10	Direction of clouds from station, or clouds. ($(D_aD_a$ or zz)
11	
12	
13	
14	Nonpersistent contrails; time first observed. (tt)
15	Persistent contrails; time first observed. (tt)
	16–19: Atmospheric Pressure and Fronts
16	Atmospheric pressure reduced to mean sea level, lowest in past 6 hours (in "tens" and "units" of mbs.). (nn)
17	Time of lowest pressure, or Barometric stability. (tt or zz)
18	Time front passed station, or Front. (tt or zz)
19	
	20–29: Wind Data
20	Direction of maximum wind in tens of degrees (dd)
21	Speed of maximum wind. (ff)
22	Speed of peak gusts. (ff)
23	Average speed of prevailing wind during past 6 hours. (ff)
24	Prevailing wind direction during past 6 hours. (dd)
25	Wind direction during past hour, or Wind direction 1 hour ago. (zz or dd)
26	Wind speed during past hour. (zz)
27	Time of highest wind. (tt)
28	Pronounced clockwise (veering) shift in wind direction. (tt, zz)
29	Pronounced counterclockwise (backing) shift in wind direction. (tt, zz)
	30–34: Fog and smoke
30	Fog; direction or variability. (D_aD_a or zz)
31	Fog began. (tt)
32	Fog ended. (tt)
33	Fog bank in distance; direction or variability (D_aD_a or zz)
34	Smoke; direction or variability. (D_aD_a or zz)
	35–39: Blowing Phenomena
35	Blowing dust (or sand), blowing snow. (tt, zz)
36	
37	Drifting dust (or sand), drifting snow. (tt, zz)
38	Dust whirls; time began or variability. (tt or zz)
39	Dust whirls; time ended or variability. (tt or zz)
	40–49: Visibility
40	Visibility; time of change, or variability. (tt or zz)
41	Visibility to NE. (VV)
42	Visibility to E. (VV)
43	Visibility to SE. (VV)
44	Visibility to S. (VV)
45	Visibility to SW. (VV)
46	Visibility to W. (VV)
47	Visibility to NW. (VV)
48	Visibility to N. (VV)
49	
	59–79: Unassigned
	80–89: Reserved for National Use
	90–99: Clouds
9	Direction from which C_L, C_M, C_H clouds are moving (D_L, D_M, D_H). To report cloud directions, the Special Phenomena group becomes $99D_LD_MD_H$.

Code Table 22

Symbol s_ps_p=Special Phenomena Table, Detailed Description

Several individual code tables are required to report data for s_ps_p. For ease of identification the individual s_ps_p code tables are considered to be parts of one general s_ps_p code table (No. 22) and they are designated by letter (e.g., 22a, 22b, 22c, etc.). The individual s_ps_p code tables are:

Code Table		Symbol
22a	Units of Specific Value	nn
22b	State of Ground	EE
22c	Time	tt
22d	Variation in Phenomena	zz
22e	State of Sea	S_aS_a
22f	Period of Sea Swell	K_pK_p
22g	Direction from Station	D_aD_a
22h	Wind Speed	ff
22i	Direction of Cloud Movement.	D_L, D_M, and D_H.

Code Table 22a

[WMO Code 463]

Symbol nn =Units of Specific Value (00–99)

Code Figure	Value (depending on "general" code figure used)
00	Zero or less than 1 unit.
01	1; 10; 100; or 1,000.
02	2; 20; 200; or 2,000.
Etc.	Etc.
12	12; 120; 1,200; or 12,000.
13	13; 130; 1,300; or 13,000.
Etc.	Etc.
98	98; 980; 9,800; or 98,000.
[1] 99	99 or more; 990 or more; 9,900 or more; 99,000 or more.

[1] When the value to be coded for symbol "nn" is "more than 99, etc." the appropriate number of $9S_pS_pnn$ groups will be used; i.e., in the first group (or groups) 99 will be reported for "nn" and the amount in excess of 100 (or 200, etc., as appropriate) will be reported for "nn" in the last group of the series. For example: 100 inches of snow on ground would be coded 90499 90400; 105 inches, 90499 90405; 210 inches, 90499 90499 90410, etc.

(NOTE: In the example given in footnote 1, immediately above, WMO Region IV has specified that the depth of snow be given in centimeters rather than inches. In this case the United States will continue national custom and report the depth of snow on ground in inches. However, those using reports from other countries should be alert to the possibility that depths of snow on ground may be reported in centimeters.)

Code Table 22b

[WMO Code 0900]

Symbol E=State of Ground (0 to 9)
Symbol EE=State of Ground (00 to 09)

Code Figure	State of Ground
00	Surface of ground dry (no appreciable amount of dust or loose sand).
01	Surface of ground moist.
02	Surface of ground wet (standing water in small or large pools on surface).
03	Surface of ground frozen.
04	Glaze or ice on ground, but no snow or melting snow.
05	Snow or melting snow (with or without ice) covering less than one-half of ground.
06	Snow or melting snow (with or without ice) covering more than one-half of ground but ground not completely covered.
07	Snow or melting snow (with or without ice) covering ground completely.
08	Loose dry snow, dust or sand, covering more than one-half of ground (but not completely).
09	Loose dry snow, dust or sand covering ground completely.

NOTES

(a) Where dust or sand is reported and the temperature is below 0° C., the word DUST or SAND is added at the end of the message.

(b) The definitions in the code for E for numbers 0 to 3 apply to representative bare ground and numbers 4 to 9 to an open representative area.

(c) In all instances the highest code figures applicable will be reported.

Code Table 22c

[WMO Code 487]

Symbol tt=Units and Tenths of Hours Before Observation (00–75)

Code Figure	Hours and minutes before observation	Code Figure	Hours and minutes before observation
00	At observation.	43	4 hours 18 minutes.
01	0 hour 6 minutes.	44	4 " 24 "
02	0 " 12 "	45	4 " 30 "
03	0 " 18 "	46	4 " 36 "
04	0 " 24 "	47	4 " 42 "
05	0 " 30 "	48	4 " 48 "
06	0 " 36 "	49	4 " 54 "
07	0 " 42 "	50	5 hours 0 "
08	0 " 48 "	51	5 " 6 "
09	0 " 54 "	52	5 " 12 "
10	1 hour 0 "	53	5 " 18 "
11	1 " 6 "	54	5 " 24 "
12	1 " 12 "	55	5 " 30 "
13	1 " 18 "	56	5 " 36 "
14	1 " 24 "	57	5 " 42 "
15	1 " 30 "	58	5 " 48 "
16	1 " 36 "	59	5 " 54 "
17	1 " 42 "	60	6 hours 0 "
18	1 " 48 "	61	6 to 7 hours.
19	1 " 54 "	62	7 to 8 "
20	2 hours 0 "	63	8 to 9 "
21	2 " 6 "	64	9 to 10 "
22	2 " 12 "	65	10 to 11 "
23	2 " 18 "	66	11 to 12 "
24	2 " 24 "	67	12 to 18 "
25	2 " 30 "	68	More than 18 hours.
26	2 " 36 "		
27	2 " 42 "	69	Time unknown.
28	2 " 48 "	70	Began during observation.
29	2 " 54 "		
30	3 hours 0 "	71	Ended during observation.
31	3 " 6 "		
32	3 " 12 "	72	Began and ended during observation.
33	3 " 18 "		
34	3 " 24 "		
35	3 " 30 "	73	Changed considerably during observation.
36	3 " 36 "		
37	3 " 42 "		
38	3 " 48 "	74	Began after observation.
39	3 " 54 "		
40	4 hours 0 "	75	Ended after observation.
41	4 " 6 "		
42	4 " 12 "		

NOTE.—Code figures 00 to 69, inclusive, refer to the STANDARD time of observation. Code figures 70 to 75, inclusive, refer to the ACTUAL time the element is observed.

Code Table 22d

[WMO Code 495]

Symbol zz=Variation in Phenomena

Code Figure	Description
70	Began while observation was being taken.[1]
71	Ended while observation was being taken.[1]
72	Began and ended while observation was being taken.[1]
73	Changed considerably while observation was being taken.[1]
74	Began after observation was taken.[1]
75	Ended after observation was taken.[1]
76	At station.
77	At station, but not in distance.
78	In all directions.
79	In all directions, but not at station.
80	Approaching station.
81	Receding from station.
82	Passing station in distance.
83	Seen in distance.
84	Reported in neighborhood, but not at station.
85	Aloft, but not near ground.
86	Near ground, but not aloft.
87	Occasional; occasionally.
88	Intermittent; intermittently.
89	Frequent; frequently; at frequent intervals.
90	Steady; steady in intensity; steadily; no appreciable change.
91	Increasing; increasing in intensity; has increased.
92	Decreasing; decreasing in intensity; has decreased.
93	Fluctuating; variable.
94	Continuous; continuously.
95	Very light; very weak; greatly below normal; very thin; very poor.
96	Light; weak; below normal; thin; poor.
97	Moderate; normal; average thickness; fair; gradually.
98	Heavy; severe; thick; above normal; good; suddenly.
99	Very heavy; killing; very severe; dense; greatly above normal; very thick; very good.

[1] Code figures 70 to 75 refer to the ACTUAL time the element is observed.

Code Table 22e

[WMO Code 3700]

Symbol S=State of Sea (0 to 9)
Symbol S_sS_s=State of Sea (00 to 09)

Code Figure	Description of sea	Height of waves in feet	Height of waves in meters
00	Calm (glassy)	0	0.
01	Calm (rippled)	0–⅓	0–0.1.
02	Smooth (wavelets)	⅓–1⅔	0.1–0.5.
03	Slight	1⅔–4	0.5–1.25.
04	Moderate	4–8	1.25–2.5.
05	Rough	8–13	2.5–4.
06	Very rough	13–20	4–6.
07	High	20–30	6–9.
08	Very high	30–45	9–14.
09	Phenomenal	Over 45	Over 14.

NOTES

(1) The average wave height as obtained from the larger well-formed waves of the wave system being observed is reported.

(2) If an exact boundary height could be reported by two code figures the lower code figure will be reported; e.g., a height of 13 feet would be reported by code figure 5 or 05.

Code Table 22f

[WMO Code 461]

Symbol K_pK_p=Period of Sea Swell (in seconds)

Code Figure	Period	Code Figure	Period
[1] 11	1 second.	14	4 seconds.
12	2 seconds.	Etc.	Etc.
13	3 seconds.		

[1] The code figure gives the actual number of seconds plus ten.

Code Table 22g

[WMO Code 442]

Symbol D_sD_s=Direction From Station (00–39)

Code Figure	Direction
00	At station.
02	NNE.
04	NE.
06	ENE.
08	E.
10	ESE.
12	SE.
14	SSE.
16	S.
18	SSW.
20	SW.
22	WSW.
24	W.
26	WNW.
28	NW.

Code Table 22g—Continued

Code Figure	Description
30	NNW.
32	N.
33	Variable.
34	Unknown.
35	In several directions.
36	In several directions, but not at station.
37	Over nearby water area.
38	Over nearby valleys.
39	Over nearby hills or mountains.

Code Table 22h

Symbol ff=Wind Speed in Knots

Code Figure	Wind Speed	Code Figure	Wind Speed
00	Calm; or unknown.	97	97 knots.
		98	98 knots.
01	1 knot.	99	99 knots; or 100 knots.
02	2 knots.		
03	3 knots.	01	101 knots.[1]
04	4 knots.	02	102 knots.[1]
Etc.	Etc.	03	103 knots.[1]
95	95 knots.	04	104 knots.[1]
96	96 knots.	Etc.	Etc.

[1] When the wind speed is greater than 100 knots TWO Special Phenomena groups are included in the message and the same code figure is reported for "S_PS_P" in both groups. In the first group "99" is reported for "S_pS_p" and in the second group the speed in EXCESS of 100 knots is reported for "S_pS_p". For example: In reporting a maximum wind of 124 knots, the groups are coded "92199 92124."

Code Table 22i

[WMO Code 431]

Symbol D_H=Direction From Which C_H Type Clouds Are Moving
Symbol D_L=Direction From Which C_L Type Clouds Are Moving
Symbol D_M=Direction From Which C_M Type Clouds Are Moving

Code Figure	Direction	Code Figure	Direction
0	Calm.	5	Southwest.
1	Northeast.	6	West.
2	East.	7	Northwest.
3	Southeast.	8	North.
4	South.	9	Unknown.

Code Table 23

[WMO Code 0885]

Symbol $d_w d_w$ = True Direction **from** which Swell Waves Come, in Tens of Degrees

Code Figure	Direction	Code Figure	Direction
00	Calm (no waves).	20	195°–204°.
01	5°–14°.	21	205°–214°.
02	15°–24°.	22	215°–224°.
03	25°–34°.	23	225°–234°.
04	35°–44°.	24	235°–244°.
05	45°–54°.	25	245°–254°.
06	55°–64°.	26	255°–264°.
07	65°–74°.	27	265°–274°.
08	75°–84°.	28	275°–284°.
09	85°–94°.	29	285°–294°.
10	95°–104°.	30	295°–304°.
11	105°–114°.	31	305°–314°.
12	115°–124°.	32	315°–324°.
13	125°–134°.	33	325°–334°.
14	135°–144°.	34	335°–344°.
15	145°–154°.	35	345°–354°.
16	155°–164°.	36	355°–4°.
17	165°–174°.	99	Waves confused, direction indeterminate.
18	175°–184°.		
19	185°–194°.		

Code Table 24

[WMO Code 3155]

Symbol P_w=Period of the Swell Waves

Code Figure	Period
0	10 seconds.
1	11 seconds.
2	12 seconds.
3	13 seconds.
4	14 seconds or more.
5	5 seconds or less.
6	6 seconds.
7	7 seconds.
8	8 seconds.
9	9 seconds.
10	Calm or period not determined.

WMO Code Table 0700

Symbol D_s=Ship's Course (true) Made Good During the 3 Hours Preceding the Time of Observation

Code Figure	Direction	Code Figure	Direction
0	Stationary.	5	Southwest.
1	Northeast.	6	West.
2	East.	7	Northwest.
3	Southeast.	8	North.
4	South.	9	Unknown.

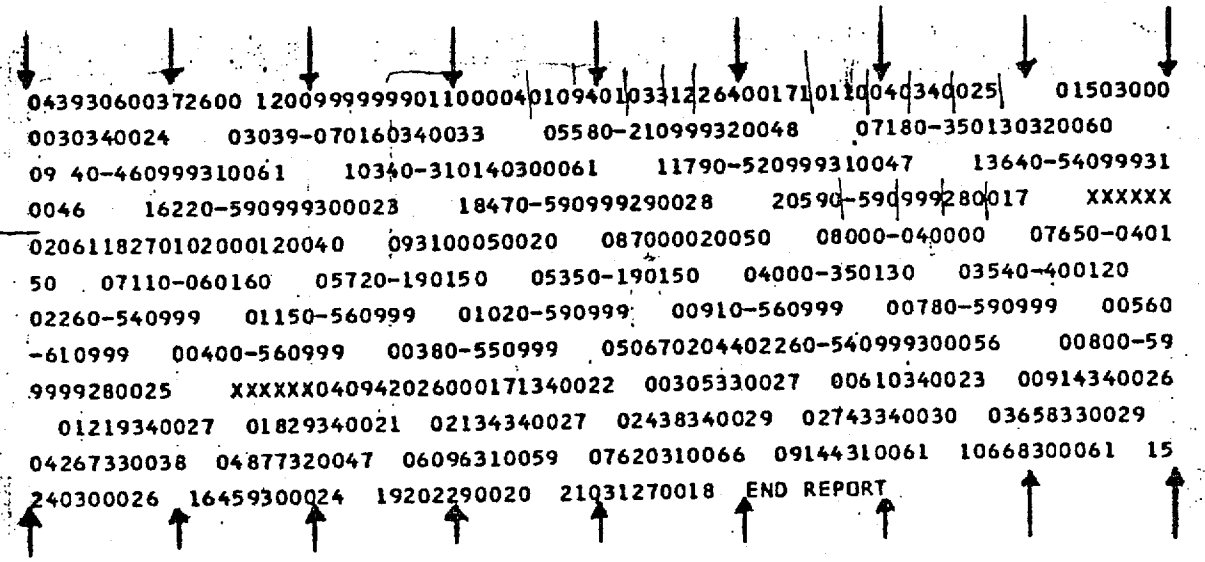
WMO Code Table 4451

Symbol v_s=Ship's Average Speed Made Good During the Three Hours Preceding the Time of Observation

Code Figure	Nautical Miles Per Hour	Kilometers Per Hour
0	0 nm/hr	0 km/hr.
1	1–5 nm/hr	1–10 km/hr.
2	6–10 nm/hr	11–19 km/hr.
3	11–15 nm/hr	20–28 km/hr.
4	16–20 nm/hr	29–37 km/hr.
5	21–25 nm/hr	38–47 km/hr.
6	26–30 nm/hr	48–56 km/hr.
7	31–35 nm/hr	57–65 km/hr.
8	36–40 nm/hr	66–75 km/hr.
9	Over 40 nm/hr	Over 75 km/hr.

APPENDIX D

SAMPLE REPORT



```
043930600372600 12009999999011000040109401033122640017101104034025  01503000
0030340024    03039-070160340033    05580-210999320048    07180-350130320060
09 40-460999310061    10340-310140300061    11790-520999310047    13640-54099931
0046    16220-590999300023    18470-590999290028    20590-590999280017    XXXXXX
020611827010200012004O    093100050020    087000020050    08000-040000    07650-0401
50  07110-060160    05720-190150    05350-190150    04000-350130    03540-400120
02260-540999    01150-560999    01020-590999    00910-560999    00780-590999    00560
-610999    00400-560999    00380-550999    050670204402260-540999300056    00800-59
9999280025    XXXXXX040942026000171340022    00305330027    00610340023    00914340026
  01219340027    01829340021    02134340027    02438340029    02743340030    03658330029
04267330038    04877320047    06096310059    07620310066    09144310061    10668300061    15
240300026    16459300024    19202290020    21031270018    END REPORT
```

The report identification group (first 40 characters) contains the following information:

Latitude	= 43.93°N
Longitude	= 60.03°W
Identification	= 72600
Time of Report	= 12.00 hours (GMT)
Report Type	= upper-air land station by block and station number
Elevation	= 4 meters
Instrument Type	= USWB external thermistor
Total length of report	= 94 ten-character words (940 characters)

The first category/counter group contains the following information:

1. Category 1 data (mandatory level) follows

2. The next category/counter group is found in the 33rd (ten-character) word of this report

3. There are 12 mandatory levels of information (there being no information above 50 mb)

4. The information in (3) is contained in 264 characters

   a. The 1000 mb data includes:

geopotential (height)	=	171 meters
temperature	=	11.0°C
dewpoint depression	=	4.0°C
wind	=	340° at 25 knots
quality	=	not specified

   b. The 50 mb data includes:

geopotential (height)	=	20,590 meters
temperature	=	-59.0°C
dewpoint depression	=	missing
wind	=	280° at 17 knots
quality of data	=	not specified

The fill group XXXXXX appears to conform with the rule that the total characters in the category/counter plus the formatted data must be evenly divisible by 10.

The next category/counter group contains the following information:

1. Category 2 data (temperature/dewpoint depression at variable pressure, or significant level data if you prefer) follows

2. The next category/counter group is found in the 61st (ten-character) word of this report

3. There are 18 levels of information

4. The information in (3) is contained in 270 characters

   a. The <u>surface</u> data includes:

station pressure	=	1020.0 mb
temperature	=	12.0°C
dewpoint depression	=	4.0°C
quality of data	=	not specified

b. The last significant level data includes:

pressure	=	38.0 mb
temperature	=	-55.0°C
dewpoint depression	=	missing
quality of data	=	not specified

The next category/counter group contains the following information:

1. Category 5 data (tropopause date) follows

2. The next category/counter group is found in the 67th (ten-character) word of this report

3. The information in (3) is contained in 44 characters

   a. The first tropopause data includes:

pressure	=	226.0 mb
temperature	=	-54.0°C
dewpoint depression	=	missing
wind	=	300° at 56 knots
quality of data	=	not specified

   b. The second tropopause data includes:

pressure	=	80.0 mb
temperature	=	-59.9°C
dewpoint depression	=	missing
wind	=	280° at 25 knots
quality of data	=	not specified

The next category/counter group contains the following information:

1. Category 4 data (wind at variable height) follows

2. The next category/counter group is found in the 94th (ten-character) word of this report

3. There is wind information at 20 levels

4. The information in (3) is contained in 260 characters

   a. The <u>surface</u> data includes

geopotential (height)	=	171 meters
wind	=	340° at 22 knots
quality of data	=	not specified

   b. The last wind level includes

geopotential (height)	=	21,031 meters
wind	=	270° at 18 knots
quality of data	=	not specified

The next (and last) category/counter group contains the following information:

1. End of this report (END REPORT)